ANNUAL REPORT

ON THE

PUBLIC HEALTH

OF

GIBRALTAR,

FOR THE YEAR

1896,

BY

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ANNUAL REPORT

ON THE

PUBLIC HEALTH OF GIBRALTAR

FOR THE YEAR 1896.

VITAL STATISTICS.

Population. The population returns of the census taken on 5th April 1891 form the basis for calculating the various rates connected with the vital statistics of the Civil community in Gibraltar.

These returns show a total Civil population of 19,100 composed of a "Fixed Civil" population of 16,906 and a "Resident Alien" population of 2,194. The former is composed of those who reside in Gibraltar without permit, and the latter those who reside here on temporary permit, and who have restrictions placed upon them with regard to marriage. The data connected with the health of the military population are not included in this Report, and deaths amongst persons entering the Colony on daily permit or for the sake of medical or surgical treatment are also excluded from the vital statistics of the locality. These last are classified as non-residents.

The census returns are retained as the basis of calculation because population does not increase in Gibraltar according to the same laws that obtain elsewhere, for reasons stated in previous Reports. It may be of interest, however, to note that the total civil population at the end of 1896 is estimated by the Police Authorities to amount to 18,894, and the same population, estimated according to the Registrar General's formula for estimating populations at intercensal periods, would be 19,563 in the middle of the year.

Births. The births amongst the "Fixed Civil" population, which is taken as the basis for calculating the birth rates, amounted to 540 during 1896. 284 were males and 256 females. The monthly distribution of births is shown in Table III. Appendix.

The birth rate for 1896 is 31·92 per 1,000. The birth rate in 1895 was 30·81 and for the quinquennial period, 1891-95, 29·83. The birth rate in 1896 is accordingly high, and, indeed, has only been exceeded once during the last fifteen years, namely, in 1892 when it amounted to 32·23 per 1,000. A continuance of high birth rates, that is to say, of birth rates higher than the average, most probably indicates that the population taken as the basis of calculation is less than the actual population. In other words, the fixed Civil population has probably increased since the last census.

There were 124 births amongst the military population. This number is an average number, though greatly in excess of the number of births in 1895. (See p. 5 Report for 1895).

Deaths.

The number of deaths registered amongst the Civil population in 1896 was 373, of which 345 were amongst the "Fixed Civil" population and 28 amongst the "Resident Aliens." In addition to these, 42 deaths were registered amongst the military population and 38 amongst the "non-residents."

The death rates of the Civil population for the year are 19·52 per 1,000 of "Total Civil" population, 20·40 per 1,000 of "Fixed Civil" population and 12·76 per 1,000 of "resident aliens."

The following figures are given for the sake of comparison with previous years:—

Year.	Estimated death-rates per 1000 living.		
	Total Civil Population.	Fixed Civil Population.	Resident Alien population
1896	19·52	20·40	12·76
1895	19·58	21·47	5·01
1891-95	19·97	22·13	4·39
1881-90	23·03	25·83	2·20

The death rates of the total and fixed civil populations for 1896 are consequently lower than the death rates both of the previous year and of the previous quinquennial period.

The "resident alien" death rate is much higher, but there are many factors connected with this section of the population which render fluctuations in its death-rate of little value as indicating conditions of public health; notably the small numbers dealt with and the element of chance that arises in the possibility of their remaining in Gibraltar for treatment, or going back to their homes in Spain, when taken ill.

Corrected death rate.

For comparison with other towns, the death rate corrected according to age and sex distribution is 21·44 per 1,000 of total Civil population. (Factor for correction=1·09809).

Quarterly mortality.

The quarterly mortality for the year is shown in Table III., Appendix. The first quarter shows the highest mortality, the third the lowest. For the last three years the quarterly mortality has followed the same course. Formerly the second quarter almost invariably showed the highest mortality, and the change has been attributed to a lessened zymotic mortality and a near approach to the quarterly mortalities prevalent in England.*

Monthly mortality.

The monthly mortality is also shown in Table III. Appendix. The greatest number of deaths occurred in March, namely, 28·90 per 1,000 of total Civil population. A considerable number of the deaths in March occurred at the extremes of life, and there was no prevalence of zymotic disease, or other unusual conditions, to account for the high mortality of the month. Indeed, the explanation of the higher mortality may be found in the abnormally low mortality of the two previous months, deaths which would normally have occurred in January or February being, so to speak, postponed till March. The lowest mortality was in May, namely, 11·93 per 1,000 of total Civil population.

Infantile mortality.

The number of children who died under 1 year of age during 1896 was 62. This is equal to an "infantile mortality" of 114·8 per 1,000 births. This is an exceptionally low infantile mortality for Gibraltar, and is by far the lowest yet recorded. The lowest previously recorded was in 1895, when the infantile mortality was 145·8 per 1,000 births. The infantile mortality for the quinquennial period 1891-95 was 166·3 per 1,000 births and for the decennial period, 1881-90, 167·4 per 1,000 births.

The decrease of the infantile mortality in 1896 has been chiefly under the head of respiratory diseases.

Age-group under five years."

The deaths amongst children under five years of age numbered 113; equal to a mortality of 61·11 per 1000 of those estimated as living at these ages. This is the lowest mortality recorded for this important age-group, the next lowest being 61·8 recorded in 1881, 62·7 in 1884, 68·1 in 1891 and 69·2 in 1895. The mortality of the age-group for the quinquennial period, 1891-95, was 73·6 and for the decennial period, 1881-90 85·5. The low mortality for the year under review is due to the exceptionally low infantile mortality.

Other age-groups.

The mortality of the several age-groups is recorded in table II. Appendix and calls for no special remark.

Sex mortality.

The deaths amongst males amounted to 196 and amongst females to 177. These numbers are equivalent to a death-rate of 22·58 and 16·98 per 1,000 of total male and total female Civil population respectively, or a difference of 5·6 per 1,000 between the two.

The marked difference between the death-rates of males and females in Gibraltar has been noticed and commented upon in previous reports. The difference between the male and female death-rates for the quinquennial period 1891-95 was 4·38 or, "corrected" according to the standard of age distribution, 6·31. The "corrected" male and female death rates for 1896 are 25·60 and 17·99 respectively, or a difference of 7·61 per 1,000. The factors for correction are 1·1339 (males) and 1·0598 (females).

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* See p. 6 & 7, Report on the Public Health of Gibraltar for 1895.

DISEASES CAUSING MORTALITY.

General remarks.

The diseases causing death during the year 1896 are tabulated in Table I. Appendix, which corresponds with the Tables published in previous years, compiled from the weekly returns submitted by the Registrar of Births, Deaths and Marriages.

In a few instances the certified causes of death are vague. For example, two of the deaths from heart disease were returned as deaths from "probably heart disease," and one death in the age-group "20 to 25 years" was returned as a death from "probably natural causes."

Zymotic mortality.

The principal zymotic diseases caused 52 deaths, equal to a zymotic mortality of 2·69 per 1,000 of the total Civil population (see Table III. Appendix). Notwithstanding the prevalence of small-pox and diphtheria during the year, this is a low zymotic mortality for Gibraltar, being ·2 per 1,000 below the average for the quinquennial period 1891-95, 2·67 per 1,000 below the average for 1886-90, and 1·81 below the average for 1881-85. The zymotic mortality for the previous year, 1895, was 2·25 per 1,000, the lowest recorded for any one year.

In consequence of the existence of small-pox and diphtheria the zymotic mortality of the last quarter was greatly in excess of the zymotic mortality of the first three quarters of the year.

Small-pox.

Small-pox was epidemic during 1896. The first notified case occurred in May. It had no connection, so far as could be discovered, with any previously known case or with any subsequent case in Gibraltar. The patient was a school teacher and had not been out of Gibraltar. The disease was epidemic in Spain at the time.

The second case was notified in the beginning of July and was definitely known to have contracted the disease in Linea. The third case was his brother, who lived with him and did not submit to re-vaccination. The 4th, 5th, 6th, 7th and 8th cases were all notified in the latter half of July and had all visited Linea, on the occasion of the annual fair there, between the 12th and 14th day previous to their showing the first symptoms of the disease.

These cases mark the commencement of the epidemic and point clearly to the infection being derived from the neighbouring Spanish town. No doubt the Fair helped greatly to disseminate the disease, not only amongst the inhabitants of Gibraltar but also amongst the inhabitants of Linea itself, of whom 9,000 to 11,000 enter and leave

Gibraltar daily. Cases continued to be notified during the subsequent months of the year, reaching their maximum in November.

The total number notified up to the end of December was 60, of whom 3 died. One of the cases notified was extremely doubtful, but has been retained in the Tables as a case of small-pox. Two additional cases were notified, of which one is shown in the Table of cases amongst non-residents, the patient having been a resident of Linea, who came into Gibraltar seeking work at the Docks. He was brought to the notice of the Sanitary Inspector by the Constable on duty and found to be suffering from confluent small-pox. He was admitted to Hospital and died 8 days afterwards. The second case proved to be a case of chicken-pox, and has not been included amongst the small-pox cases.

The disease continued to be prevalent in the early months of the present year, 1897, 20 more cases being notified in January, and the general character of the epidemic up to the end of that month resembles previous small-pox epidemics in Gibraltar, (see graphic charts appended to the Annual Report on the Public Health of Gibraltar for 1894). It will be remembered that the chief characteristic of these epidemics is the tendency of the disease to recrudesce even though it may seem to have entirely disappeared for a month or two.

The monthly distribution of the sixty cases notified in 1896 is shown in Table IV. Appendix.

They were distributed as follows amongst the several age-groups :—

Under 5 years	0 cases	0 deaths.
Age-group 5-10 years... ...	4 "	0 "
" 10-15 "	6 "	0 "
" 15-20 "	12 "	0 "
" 20-25 "	21 "	1 "
" 25-35 "	11 "	2 "
" 35-45 "	4 "	0 "
" 45-55 "	2 "	0 "
Total	60 cases	3 deaths.

All the cases were reported to have been vaccinated in infancy, but some of the statements, especially those regarding the vaccination of the fatal cases, may be considered questionable. The statements could not be verified.

None of the cases had been previously re-vaccinated, with the exception of one. The case in question was acting as nurse to a previous case, and the operation of re-vaccination was not undertaken until seven days afterwards. Re-vaccination was consequently too late to afford protection. The onset of the disease occurred on the 14th day after first exposure to contagion and on the 7th day after re-vaccination. The attack was extremely mild.

The distribution of the cases according to the nature of the tenement occupied is as follows :—

In 1-room tenements	... ...	24 cases.
" 2-room "	... ...	4 "
" 3-room "	... ...	10 "
" + 3-room "	... ...	22 "
	Total ...	60 cases.

Six of the cases occupied Government quarters.

With regard to the connection between one case and another, there were two well marked *foci* of disease; one in the South district at the foot of Scud Hill and the other in the Town in Irish Town. The former group had its origin in Linea, the first case in the group having slept in a house in Linea where there were cases of small-pox. He occupied a 1-room tenement dwelling in a poor and insanitary locality and was at once removed to Hospital. A brother and sister had, however, already become infected and were attacked with the disease on the 9th and 10th day after his removal to Hospital. They were also removed to Hospital, but 4 days afterwards a member of the family occupying the adjoining tenement was attacked. Unfortunately there was no power to remove this case also to Hospital, and the patient proved a dangerous source of infection to the neighbourhood, being eventually convicted of wilful exposure in the public streets while capable of spreading the infection. Another member of the family was attacked 13 days after this case was notified, and died. Five other cases subsequently occurred in the immediate neighbourhood, one of them also proving fatal. The second group, in Irish Town, originated in a series of concealed cases, the resulting infection being apparently communicated through the mother of two of the concealed cases, who was caretaker of the house where the cases occurred or from whence the contagion evidently came.

These two groups accounted for sixteen of the 60 cases, notified in 1896, as well as for 4 more notified in the first week of January 1897. All the fatal cases occurred amongst these sixteen cases.

Of the remaining 44 cases, 10 had visited infected districts in Spain between the 10th and 14th day previous to being attacked, some having been directly in contact with cases of small-pox there; 13 were probably indirectly affected from cases in Spain by association with workmen and others coming from infected houses in Linea; 13 could not be referred to any definite source of infection; and 8 were contracted from previous cases in Gibraltar.

One of these eight cases contracted the disease from a concealed case; five of them lived with and were in contact with cases in the same family or house, without having been re-vaccinated; one occurred in a family, the previous case in which had been removed to Hospital 11 days previously; and the last of the eight cases in a house, from which a case had been removed to Hospital thirty-one days previously and had been discharged five days previously. With regard to this last case it should be noted that concealed cases were discovered afterwards in adjoining rooms and that the connection between it and the case previously removed to and discharged from Hospital is doubtful.

Taking these facts into consideration one must regard the epidemic as practically dependent upon causes outside Gibraltar, or upon causes at present beyond the control of the Sanitary Commissioners. The two large groups first mentioned have been explained by the existence of concealed cases and by insufficient power to remove cases compulsorily from dangerously infectious localities; while the remaining cases due to definite sources of infection in Gibraltar could have been prevented, in all probability, by the immediate re-vaccination of members of the family or occupants of the building whenever a case of small-pox occurred. Indeed the almost universal neglect of this preventive measure demands serious consideration, if the colony is to be relieved of any of the expense and danger of small-pox epidemics in future.

As a set-off against this, it is satisfactory to note the efficiency of the compulsorily vaccination of infants, which renders the age-group under 5-years, the age-group most severely affected in unvaccinated communities, practically immune in Gibraltar.

Chicken Pox. Chicken-pox was slightly prevalent in the months previous to the outbreak of small-pox and again during the last two months of the year. The cases were carefully observed and there was found to be no confusion during the year between the nomenclatures of chicken-pox and small-pox and the differentiation of the one from the other.

Scarlet Fever. Four well-marked cases of scarlet fever were notified. They had no connection with one another and gave rise to no epidemic outbreak, a fact constantly noted in connection with this disease in Gibraltar.

Measles. Five cases of measles were notified. They, too, had no connection with one another and gave rise to no epidemic outbreak.

Diphtheria. Twenty-nine cases of diphtheria were notified, thirteen of whom died. The mortality from this disease was consequently ·68 per 1000 of the total Civil population. The corresponding mortality for 1891-95 was ·36 per 1,000 and, for 1886-90, 1·20 per 1,000. The year 1896 compares, therefore, unfavourably with the past five years, although considerably better than the years previous to 1891. (See Annual Report for 1895, p. 13).

The facts connected with the increase of diphtheria in 1896 are conflicting, and the origin of the cases obscure. Cases occurred throughout the year, January, May and September being the only months exempt, but the disease was most prevalent during the last quarter.

Twenty-three out of the twenty-nine cases occurred in twenty-three different families, who had no connection with one another either as regards relationship or locality or school attendance. Neither had they anything in common as regards milk, food and water supply, except in so far as these latter conditions are common to the population generally.

Three cases occurred in two families relatives of one another and living in adjoining tenements. They occurred almost simultaneously; the two, notified last, not being recognized as diphtheria until one had died and the other had been admitted into the Colonial Hospital, where the child had been taken by the mother for treatment as an out-patient.

Two cases occurred in a family within 18 days of one another. In the interval, or rather at the time the first case was notified, the family moved or were moving into another house, the second case occurring there. It was thought that the contagion had been carried from one house to the other in furniture, especially as the first case proved fatal and had not been in the second house. There are so many other ways in which the contagion might have been conveyed, that the opinion expressed by the medical attendant regarding its conveyance by furniture is open to question, and scarcely throws light upon the source of the disease.

The only other case, notified in 1896, that seemed connected with any other subsequent case, is one which was notified in December but which was considered a very doubtful case. The child was isolated at home but allowed to mix with the other children in the family thirteen days afterwards, with the result that another and fatal case, notified in 1897, subsequently occurred.

The facts regarding school attendance show, in a still more marked manner, how little one case depended upon asssociation with another. 22 out of the 29 cases did not attend any school, and no two cases out of the remaining 7, notified in 1896, attended the same school.

Sanitary defects were noted in all but five of the houses, from which the cases were notified. In nine of the houses the defects were of a grave character and in the others there existed dampness of rooms, bad light and ventilation, insufficient flushing of W.Cs, or polluted water supply.

Twelve of the cases occurred in 1-room tenement dwellings, three in 2-room tenements, one in 3-room tenements and thirteen in tenements containing more than 3 rooms. According to the estimated distribution of population (see Table IV. Report on Public Health for 1895), the more wealthy classes were attacked in greater proportion than the poorer classes; and this may be attributed in a measure to the fact that the cases connected with previous cases occurred in families occupying better class houses and consequently not liable to compulsory isolation in Hospital. It should be noted, however, that want of isolation in Hospital has not played the part it generally does in the propagation of this disease amongst families, so far as the facts connected with the cases notified in 1896 are concerned.

The proportion of deaths to notified cases is high. There have probably been many unnotified and undetected cases. In fact the majority of the notified cases were not notified until grave symptoms supervened. It should also be noted in comparing the mortality amongst these cases with the mortality amongst similar groups of cases elsewhere, that the antitoxin treatment, which is now definitely recognized as having a distinct influence on the mortality of diphtheria, has not been universally applied in Gibraltar.

Enteric Fever. Eight cases of Enteric Fever were notified with two deaths. This is equivalent to an Enteric mortality of ·10 per 1,000 of total Civil population. For the quinquennial period 1891-95 this mortality was ·20 per 1,000, for 1886-90, ·34 per 1,000, and for 1881-85, ·57 per 1,000. (See page 14, Annual Report for 1894). The year 1896 compares, therefore, favourably with previous years, a lower mortality being recorded only once previously, namely, in 1895, when there were no deaths out of a total of six notified cases.

Four of the cases, notified in 1896, had been in Spain or Morocco on the date when incubation probably commenced. The remaining four cases used a water, which was found seriously polluted, although no specific enteric micro-organism was detected on bacteriological examination.

Continued Fever. Continued Fever accounted for one death and five notified cases during the year.

Other zymotic diseases. No other zymotic disease was markedly prevalent. The cases of whooping cough, influenza, and erysipelas, the only others of this class of disease notified, are shown in Table IV., Appendix.

Diarrhœal diseases. The number of deaths from diarrhœal diseases, amongst which are included deaths certified as occurring from gastro-enteritis or infantile diarrhœa, was 31, equal to a mortality of 1·62 per 1,000 of total Civil population. This is the lowest mortality previously recorded in Gibraltar from diarrhœal diseases. (See Table on page 15 of Annual Report for 1895). The average for 1891-95 was 1·88 per 1,000, for 1886-90, 2·35, and for 1881-85, 2·15 per 1000.

Tubercular diseases.

The tubercular mortality shown in Table III. includes the deaths shown in Table I. as deaths from phthisis, as well as those shown amongst the various forms of tubercle. Apart from the fact, that deaths certified as deaths from phthisis are usually deaths from tubercle of the lungs, it is necessary to include these deaths in estimating the tubercular mortality in order to preserve a continuity of statistics, by which this mortality can be compared with the mortality from the same class of diseases in previous years, published for the first time in the Annual Report for 1891. (See page 15 and Table IX. Appendix of that Report). It should also be noted that cases of acute meningitis in children have been shown as cases of tubercle of the brain throughout these tables.

The total number of deaths from this class of disease in 1896 was 52, equal to a tubercular mortality of 2·72 per 1,000 of total Civil population. The corresponding mortality for 1891-95 was 3·16 per 1,000, for 1886-90, 2·85, and for 1881-85, 3·93 per 1,000. The mortality for 1896 is consequently below the mortality of previous quinquennial periods. In fact, only on three previous occasions has a lower mortality been recorded during the past fifteen years. (See page 16 of Annual Report for 1895).

The causes of tubercular disease in Gibraltar have been enumerated in previous reports, and much has still to be done before the conditions, which influence its production and distribution, can be controlled or modified.

Respiratory diseases.

The chief respiratory diseases include bronchitis, congestion of the lungs, pneumonia, phthisis and tubercle of the lungs. The last two, which should preferably be excluded, are included for the purpose of comparing the respiratory mortality of the year with that published in previous years

The total number of deaths from these diseases in 1896 was 100. This is equal to a mortality of 5·23 per 1,000 of total Civil population. The corresponding mortality in 1891-95 was 5·38, in 1886-90, 5·71 and in 1881-85, 6·69. The quarterly distribution of deaths from these diseases in 1896 does not show such a marked incidence during the first quarter as formerly, although that quarter continues to account for the largest proportion of the deaths. (See Table III. Appendix). The fact is probably accounted for by the exceptional dryness of the first quarter of the year.

SANITARY CONDITIONS.

General Remarks.

The sanitary condition of Gibraltar during 1896 was generally favourable. The various measures that have been gradually introduced during more recent years worked smoothly and well and public opinion has now become of considerable assistance in the carrying out of routine sanitary work. In no previous year have so many house-owners and tenants voluntarily applied for sanitary inspections of their premises, and the improvements effected have in most cases been thorough and permanent.

Prevention of infectious diseases: Notification.

Notification was made applicable during the year to members of the military population not occupying military quarters and in cases, where their children attend civil schools. Towards the end of the year an arrangement was also made, by which information is conveyed to the Health Officer regarding the existence of infectious diseases amongst troops in the Garrison.

The system of dual notification introduced towards the close of 1895 has been of value and led to the notification of some cases of small-pox that, in all probability, would otherwise have been concealed. This was specially noticeable after the first series of prosecutions for non-compliance with the notification clauses had taken place.

Vaccination.

The efficiency of primary vaccination and the almost universal neglect of re-vaccination have been referred to already. Unless some measure can be introduced to make the latter compulsory under certain conditions, as, for example, when a case of small-pox has occurred in a crowded building or locality, any marked increase in the number of re-vaccinated persons need not be anticipated, although the hope, expressed in last year's Annual Report, that the people themselves will come gradually to demand re-vaccination, may not be altogether unjustified.

Isolation.

The means of isolating cases of small-pox broke down temporarily under the strain of having to provide for a larger number of cases than usual in November and December; and patients, that should have been isolated in Hospital, had to remain in their houses. An additional hut for six more beds has since been constructed in connection with the Small-pox Hospital, and this, it is hoped, will prove ample in future.

In some cases of small-pox and diphtheria, not treated in Hospital, the maintenance of isolation at home during a definite period of convalescence, as recommended by recognized authorities, was not carried out, especially on the approach of the Christmas festivities, and, in some instances, the patients were provided with medical certificates, which prevented any action being taken to restrain convalescents from mixing with the general public at too early a date. It is most desirable, even in the case of mild attacks of dangerous infectious disease, that isolation should be maintained and combined with appropriate disinfectant treatment during the full period recognized as necessary by competent authorities.

Disinfection.

The disinfection of articles of bedding and clothing has been put on a more satisfactory basis than formerly, the arrangements made with the Colonial Hospital authorities causing now less delay in having these articles disinfected and returned to owners. The arrangements are not, however, perfect and it is still possible for the poorer classes to be deprived of their bedding for purposes of disinfection for three or four nights at a time, though the necessity of doing so is avoided as much as possible.

The disinfection of rooms occupied by patients has been very thoroughly and effectively carried out by the Sanitary Inspectors according to definite instructions from the Health Officer in each case. The facts already noted with regard to the small-pox and diptheria epidemics are proof of the efficiency of the methods of disinfection employed; which are those recommended by the Local Government Board. The number of individuals in the houses where cases of small-pox and diptheria occurred amounted to 3076, (2189 adults and 887 children), of whom 417 were members of the individual familes where the cases occurred. The small number subsequently attacked in this population has already been noted and not a single case could be definitely attributed to contagion from rooms that had already been disinfected. In consequence of a memorandum on the subject from some of the local medical practitioners a full report on this subject has already been submitted to the Sanitary Commissioners, but it would be useful, in order to avoid possible comment in future, to have the Sanitary Commissioners' responsibility with regard to the disinfection of rooms and houses, other than common lodging houses, more clearly defined. Although neither in the Sanitary Orders in Council nor in the Bye-Laws have the Sanitary Commissioners power to disinfect such houses, it has so far been the custom for them to undertake the responsibility of disinfection by consent or at the request of heads of families and their medical advisers, and it is this responsibility that, it seems advisable, should be placed on a firmer basis.

The disinfection of sewage by sulphate of iron and chloride of lime has been carried out, as in previous years. The reports of trials of the Hermite system of sewage disinfection continue to warrant the belief already expressed that no better system for the requirements of Gibraltar at present exists.

The trial of this system at Netley gave unequivocal evidence of its value as a deodorant, and it is an effective system of deodorization that is chiefly required in this climate. The increased length of sewer and the diminished velocity of the discharge in the new sewerage scheme are likely to make the need of deodorization more necessary than ever.

The disposal of the discharges from patients in Hospital, suffering from such diseases as enteric fever, by means of cremation was referred to in last year's Report; but no practical means have yet been devised for giving effect to this most effective method of removing disease germs from the locality.

School attendance. The regulations regarding school attendance in connection with the occurrence of cases of infectious disease have proved eminently satisfactory; and, notwithstanding the prevalence of diphtheria during the year, no case could definitely be traced to schools. One suspicious case in the earlier part of the year seemed to have its origin in school, and led to the school being voluntarily closed for a time, but this was the only instance in which such a course seemed advisable.

Sewerage. Great progress has been made in the construction of the new sewer, and a considerable section was open for inspection towards the end of the year. Otherwise the sewerage conditions are the same as in previous years and call for no further remark.

Water Supply. A marked improvement has taken place in the public water supply. The filter connected with the Moorish Castle Tank has had the effect of purifying the surface water, collected on the rock, to such an extent that it has been possible to allow all the early rains to enter the tank. The samples collected after filtration showed the water to be of a pure quality even at the very commencement of the rainy season; whereas in former years the degree of organic impurity has been so high as to necessitate the rejection of the first rains altogether.

With the additions now contemplated both in collecting areas and storage tanks, the public water supply will also be placed on a sound footing as regards quantity, and enable the Commissioners to do away with the highly unsatisfactory water-supply to shipping now provided at the Watering Jetty.

With regard to private tanks and wells the conditions are the same as formerly, and filters, such as those detailed in last year's Annual Report, have not as yet been adopted by house owners or tenants.

Bacteriological laboratory. Work was commenced in the new bacteriological laboratory towards the end of the year; and sufficient time has not elapsed to enable any results to be published. It is hoped, however, that the laboratory will not only prove useful for the purpose of scientific investigations, but will also become of valuable assistance in connection with many of the questions of sanitation that are constantly arising.

Milk supply. The number of samples of milk taken for analysis during the year was 171, of which 160 were "up to standard" and 11 adulterated. The amount of added water in the adulterated samples varied from 17 to 42 per cent. This compares favourably with the samples seized during the previous year, when 25 out of 170 samples were found adulterated. The application of the licensing clauses to milk shops has no doubt helped to prevent adulteration, the fear of losing a license acting as a useful deterrent.

Food supplies. The food supply generally was of good average quantity and quality; and no marked prevalence of disease was observed in the carcasses of animals slaughtered for the Markets. The bakeries and ærated water manufactories were periodically and systematically inspected; and a full investigation made into the sanitary conditions of the ice factory.

Habitations. The sanitary condition of habitations has steadily improved and, as already stated, house owners and tenants are more willing than formerly to accept measures of sanitary reform. The plans submitted for the erection of new and the reconstruction of old houses show a much greater appreciation of the requirements of sanitation, and little difficulty is now experienced in obtaining satisfactory modifications of plans which transgress important hygienic principles.

The chief sanitary difficulty in connection with habitations is the prevention of over-crowding; but it is remarkable how limited the outbreaks of infectious and other diseases have been, notwithstanding the fact that the specific density of population is extremely high. This, however, is only further evidence of the efficiency of the sanitary measures in vogue here and of the sanitary supervision exercised under the authority of the Sanitary Commissioners. The importance of maintaining this high standard of sanitation in so crowded a locality cannot be too strongly urged.

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APPENDIX

TO THE

ANNUAL REPORT ON THE PUBLIC HEALTH

OF

GIBRALTAR,

FOR THE YEAR

1896,

TABLE I.

Deaths registered in Gibraltar during 1896, amongst the Civil Population, showing diseases causing death and ages at death.

CAUSE OF DEATH.	At all ages.	Under 1 year of age.	1 year.	2 years.	3 years.	4 years.	Total under 5 years.	OTHER AGE-GROUPS.									
								5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
General Diseases	147	37	11	10	6	2	66	6	—	3	7	7	10	6	9	7	26
Local Diseases	219	24	14	6	2	—	46	3	2	6	7	11	16	24	28	43	33
Poisons	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Injuries	6	1	—	—	—	—	1	—	—	—	2	2	—	1	—	—	—
Grand Total...	373	62	25	16	8	2	113	9	2	9	16	20	27	31	37	50	59
CLASS I.																	
GENERAL DISEASES.																	
Small-pox	3	—	—		—	—	—	—	—	—	1	2	—	—	—	—	—
Whooping Cough	2	1	—		1	—	2	—	—	—	—	—	—	—	—	—	—
Diphtheria	13	1	1	4	3	2	11	2	—		—	—	—	—	—	—	—
Simple Continued Fever .	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Enteric Fever	2	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—
Diarrhœa	31	18	5	2	2	—	27	—	—	—	—	—	—	—	1	1	2
Dysentery	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Erysipelas	1	—	—	—		—	—	—	—	—	—	—	—	—	—	—	1
Pyæmia	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Tetanus	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Tubercle (not classified) ...	5	2	1		—	—	3	—	—	—	1	—	—	—	—	1	—
" of Lungs	16	1	—	—	—	—	1	—	—	1	2	3	7	2	—	—	—
" of Brain	12	2	4	4	—	—	10	2	—	—	—	—	—	—	—	—	—
" of Intestine ...	1	—		—	—	—	—	1	—	—	—	—	—	—	—	—	—
Syphilis	5	5	—	—	—	—	5	—	—	—	—	—	—	—	—	—	—
Starvation	4	4	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—
Alcoholism	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Vegetable parasites (Thrush)	1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Rheumatic Fever	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Rheumatism	3	1	—	—	—	—	1	1	—	—	—	—	—	—	1	—	—
Malignant New growth ..	14	—	—	—	—	—	—	—	—	—	1	—	1	1	6	3	2
Anæmia (pernicious) ...	4	—	—	—	—	—		—	—	—	—	1	1	1	—	1	—
Hæmophilia	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Diabetes mellitus	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Immaturity at Birth ...	1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Debility	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Old Age	16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16
(Probably natural causes ?)	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Total...	147	37	11	10	6	2	66	6	—	3	7	7	10	6	9	7	26

TABLE I.—*Continued.*

CAUSE OF DEATH.	At all ages.	Under 1 year of age.	1 year.	2 years.	3 years.	4 years.	Total under 5 years.	OTHER AGE-GROUPS.									
								5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards
CLASS II.																	
LOCAL DISEASES.																	
NERVOUS SYSTEM.																	
Inflammation of Cord...	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Meningitis...	2	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—
Congestion of Brain ...	5	—	—	—	—	—	—	—	—	—	—	1	—	1	1	1	1
Softening of Brain ..	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Apoplexy	21	—	—	—	—	—	—	—	—	—	—	1	1	1	2	9	7
Paralysis	10	—	—	—	—	—	—	—	—	—	—	—	1	1	2	4	2
Infantile Convulsions...	5	4	1	—	—	—	5	—	—	—	—	—	—	—	—	—	—
Laryngismus stridulus	1	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Dementia	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
CIRCULATORY SYSTEM.																	
Pericarditis	2	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—
Endocarditis	3	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2	—
Heart Disease (not specified)	15	—	—	—	—	—	—	—	—	—	—	1	1	2	1	6	4
Valvular disease of heart	6	1	—	—	—	—	1	1	—	1	—	—	—	—	1	1	1
Fatty degeneration of heart	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Atrophy of heart ...	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Hypertrophy of heart	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—
Angina pectoris... ...	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Degeneration of arteries	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	2
Aneurism	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Embolism	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
RESPIRATORY SYSTEM.																	
Croup...	1	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Laryngitis	2	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—
Bronchitis	31	7	5	2	—	—	14	1	—	—	1	—	1	1	2	6	5
Asthma	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Congestion of Lungs...	6	1	—	—	—	—	1	—	—	1	—		—	—	3	1	—
Pneumonia...	29	5	5	2	—	—	12	1	—	—	—	1	—	5	2	4	4
Phthisis	18	—	—	—	—	—	—	—	—	4	2	2	5	1	2	1	1
Gangrene of Lung ...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Atelectasis	1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Pleurisy	3	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1
DIGESTIVE SYSTEM.																	
Teething	4	3	1	—	—	—	4	—	—	—	—	—	—	—	—	—	—
Ulceration of Stomach	2	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—
Indigestion...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Inflammation of Intestines	4	—	—	—	—	—	—	—	—	—	—	1	1	1	1	—	—

TABLE I.—*Continued.*

CAUSE OF DEATH.	At all ages.	Under 1 yr. of age.	1 year.	2 years.	3 years.	4 years.	Total under 5 years.	OTHER AGE-GROUPS. 5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
LOCAL DISEASES—*Cont.*																	
DIGESTIVE SYSTEM—*Cont.*																	
Obstruction of Intestine...	4	—	—	1	1	—	2	—	—	—	1	—	—	1	—	—	—
Internal strangulation of Intestine	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Inflammation of Liver ..	5	—	—	—	—	—	—	—	—	—	—	1	1	1	2	—	—
Acute yellow atrophy ..	2	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—
Peritonitis	3	1	—	1	—	—	2	—	—	—	—	—	1	—	—	—	—
Addison's Disease	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
URINARY SYSTEM.																	
Nephritis	6	—	—	—	1	—	1	—	—		1	—	—	—	2	1	1
Bright's Disease	2	—	—	—	—	—	—	—	—	—	-	—	1	—	1	—	—
(Uraemia ?)	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Renal Calculus	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
ORGANS OF LOCOMOTION.																	
Inflammation of Bone ..	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Abscess	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Gangrene	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Eczema	1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Carbuncle	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Total Local Diseases.	219	24	14	6	2	—	46	3	2	6	7	11	16	24	28	43	33
CLASS III.																	
POISONS.																	
Mushroom Poisoning ..	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Total...	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
CLASS IV.																	
INJURIES.																	
Accidental—																	
Asphyxia	1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Multiple Injury... ...	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Suicidal—																	
Asphyxia by submersion	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Homicidal—																	
Wound of Neck ...	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—
Wound of Chest ...	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Judicial—Hanging	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Total..	6	1	—	—	—	—	1	—	—	-	2	2	—	1	—	—	—

TABLE II.

Sex Mortality amongst the Civil Population, Gibraltar, in 1896, distributed according to Months and Age-groups.

Months.	Deaths at all ages.		Deaths amongst Males according to Age-groups.											Deaths amongst females according to Age-groups.										
	Males.	Females.	Under 5 yr.	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.	Under 5 yr.	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75 and upwards.
January	18	14	5	1	—	—	2	—	3	2	1	1	3	1	—	—	—	2	1	2	—	1	2	5
February	17	18	7	—	1	—	—	—	—	3	3	2	1	7	—	—	—	—	—	—	—	—	4	7
March......	15	31	4	1	—	—	2	—	1	1	1	4	1	7	—	—	—	2	2	—	1	6	4	9
April	17	7	6	1	—	1	—	4	—	2	1	1	1	2	1	—	1	1	—	—	—	—	1	1
May	10	9	5	—	—	—	2	—	1	—	2	—	—	2	—	—	—	1	—	1	—	2	2	1
June	21	18	9	—	—	1	—	1	4	3	1	—	2	5	—	—	—	2	—	2	3	—	1	5
July	19	10	7	1	—	—	—	—	2	3	2	4	—	2	—	—	—	—	1	—	1	3	2	1
August	16	6	6	—	—	1	—	—	4	—	3	—	2	1	1	1	—	—	—	—	—	—	2	1
September	16	9	3	—	—	—	—	4	3	1	1	1	3	1	1	—	1	—	—	—	2	—	3	1
October	15	20	6	1	—	1	—	3	—	—	1	2	1	6	1	—	1	—	—	1	1	3	3	4
November	18	12	5	—	—	1	—	1	1	4	3	1	2	4	—	—	—	—	—	1	—	—	5	2
December	14	23	2	—	—	—	2	2	1	4	—	2	1	10	—	—	1	—	1	—	—	3	3	5
Total deaths ..	196	177	65	5	1	5	8	15	20	23	19	18	17	48	4	1	4	8	5	7	8	18	32	42
Annual death-rate per 1000 at each age	22·58	16·98	73·52	5·99	1·12	5·44	9·10	10·29	16·75	27·67	38·53	80·35	212·50	49·72	4·59	1·08	3·23	7·06	2·89	5·52	8·00	24·55	80·00	238 63

TABLE III.

Monthly distribution of Births, Deaths and Principal Diseases causing death, amongst the Civil Population of Gibraltar, during 1896.

Months.	Meteorology.			Total Births (Fixed Civil Population).	Deaths from all causes.		Monthly death-rates per 1000 living.		Quarterly death-rates per 1000 living.		Principal zymotic diseases.		Deaths from principal zymotic diseases.								Tubercular diseases.		Respiratory diseases.	
	Rainfall in inches.	Mean relative humidity.	Mean temperature in shade (Fahrenheit).		Total Civil Population.	Fixed Civil Population.	Total Civil Population.	Fixed Civil Population.	Total Civil Population.	Fixed Civil Population.	Total deaths.	Quarterly death-rates (Total Civil Pop.) p. 1000 living.	Small Pox.	Measles.	Scarlet fever.	Diphtheria.	Whooping cough.	Enteric fever.	Continued fever.	Diarrhœa.	Total deaths.	Quarterly death-rates (Total Civil Pop.) p. 1000 living.	Total deaths.	Quarterly death-rates (Total Civil Pop.) p. 1000 living.
January	5·82	78	57·3	49	32	28	20·10	19·87	23·66	24·13	—	1·04	—	—	—	—	—	—	—	—	6	3 97	12	7·95
February ...	3·18	76	56·2	48	35	29	21·98	20·58			1		—	—	—	—	—	—	—	1	4		13	
March	2·78	76	59·1	55	46	45	28·90	31·94			4		—	—	—	—	—	—	—	4	9		13	
April	0·93	69	62 0	32	24	22	15·07	15·61	17·17	18·21	3	2·82	—	—	—	1	—	1	—	1	5	2 51	8	4·18
May	1·59	69	65·9	51	19	19	11·93	13·48			5		—	—	—	—	—	1	—	4	2		4	
June	0·08	61	70·6	44	39	36	24·50	25·55			6		—	—	—	—	—	—	—	5	5		8	
July	0·00	61	75·4	49	29	26	18·21	18·45	15·91	16·79	5	2·09	—	—	—	2	—	—	—	3	4	1·88	10	5·02
August	0·00	67	73·6	29	22	20	13·82	14·19			4		—	—	—	2	—	—	—	2	3		9	
September ...	0·14	65	73·7	45	25	25	15·70	17·74			1		—	—	—	—	—	—	—	1	2		5	
October	4·03	70	64·2	35	35	32	21·98	22·71	21·36	22·47	13	4·82	1	—	—	5	—	—	1	6	5	2·51	4	3·76
November ...	6·80	75	57·0	46	30	26	18·84	18·45			4		—	—	—	1	1	—	—	3	2		7	
December ...	4·40	78	55·3	57	37	37	23·24	26·26			6		2	—	—	2	1	—	—	1	5		7	
Whole year ..	29·75	70 4	64·2	540	375	345	19·52	20·40	19·52	20 40	52	2·69	3	—	-	13	2	2	1	31	52	2 72	100	5·23

TABLE IV.

Infectious and Contagious Diseases notified during 1896, under provisions of Section 10, "Medical Ordinance, Gibraltar, 1885."

Months.	Cases occurring amongst the Civil Population.																				Cases landed from Bay, &c.									
	Small-pox.		Chicken Pox.		Scarlet Fever.		Measles.		Whooping Cough.		Diphtheria.		Continued Fever.		Enteric Fever.		Influenza.		Erysipelas.		Small-pox.		Enteric Fever.		Measles.		Diphtheria.		Dysentery.	
	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died	Reported	Died
January … … … … …	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	1	—	—	—	—	—	1	—	2	—	—	—	—	—
February … … … … …	—	—	1	—	—	—	—	—	—	—	2	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—
March … … … … …	—	—	2	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
April … … … … …	—	—	5	—	—	—	2	—	—	—	1	1	—	—	1	1	2	—	—	—	1	—	—	—	—	—	1	—	—	—
May… … … … …	1	—	4	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	1	—	1	—	—	—	1	—	—	—	—	—
June … … … … …	—	—	3	—	1	—	—	—	—	—	1	—	1	—	3	—	—	—	1	1	—	—	1	1	—	—	—	—	—	—
July… … … … …	7	—	2	—	—	—	—	—	—	—	3	2	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
August .. … … … …	7	—	1	—	—	—	1	—	—	—	3	2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
September … … … …	1	1	—	—	1	—	1	—	—	—	—	—	1	1	—	—	—	—	—	—	9	1	—	—	—	—	—	—	—	—
October … … … … .	9	—	—	—	—	—	1	—	—	—	7	5	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
November … … … ..	23	1	4	—	1	—	—	—	—	1	5	2	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	—	1	—
December … … … …	12	1	5	—	1	—	—	—	2	1	5	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total …	60	3	27	—	4	—	5	—	2	2 *	29	13	5	1	8	2	7	—	2	1	15	1	3	1	3	—	1	—	1	—

* These two deaths were un notified cases.

TABLE V.

Statement of the chief sanitary defects dealt with amongst the civil habitations of Gibraltar during 1896.

Description of Defect.	Number of Houses in which the defect was noted.
A.—WATER SUPPLY.	
1 Collecting area polluted	5
2. Mouth or inlet of tank exposed to pollution...	35
3. Water in tank impure	19
4. Tanks deficient of proper means of drawing water ...	4
5. Insufficient supply of water for flushing &c., ...	58
B.—SEWERAGE.	
1. Insufficient W.C. accommodation	3
2. Insufficient means of flushing	6
3. Situation of W.C. insanitary...	15
4. Soil pipes leaking	8
5. Soil pipes embedded in the walls	29
6. Soil pipes unventilated	3
7. Fittings, &c., insanitary...	50
8. House drains defective	30
9. House drains connected with adjoining houses	11
10. Wash house troughs connected with drains	4
11. Rain gutter pipes connected with drains	2
12. Ventilation of W.Cs. insufficient	48
13. Soil pipes of W.Cs. passing inside living rooms	2
C.—KITCHENS.	
1. Sinks untrapped	10
2. Sinks directly connected with Sewers	13
3. Without flues...	18
4. Accommodation deficient	18
D.—LIVING ROOMS.	
1. Dirty	2
2. Damp	23
3. Overcrowded	9
4. Badly lighted and ventilated	55
5. Generally unfit for habitation	4
6. Roofs leaking...	14
7. Drains under floor...	6
E.—YARDS.	
1. Badly paved	10
2. Blocked with stores and refuse	5
3. Surface drain traps defective...	17
4. Fouled by animals	2
F.—PREMISES GENERALLY.	
1. Unfit for habitation	2
2. In bad repair	12
3. Deficient of refuse receptacles	34
4. Stores, shops and kitchens used as living rooms and being unfit for the purpose	18
Total	604